Docket No.: A-2456

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

Applic. No.	:	09/626,312 Confirmation No.: 7920
Inventor	:	Franck Bausela et al.
Filed	:	July 26, 2000
TC/A.U.	:	3724
Examiner	:	Omar Flores-Sánchez
Title	:	Device for Adjusting the Phase of Perforating Devices as a Function of the Folding Mode

03/05/04 #20 Brief

Docket No.	:	A-2456
Customer No.	**:**	**24131**

Hon. Commissioner for Patents
Alexandria, VA 22313-1450

BRIEF ON APPEAL

S i r :

This is an appeal from the final rejection in the Office action dated November 14, 2003, finally rejecting claims 1-7 and 9-17.

Appellants submit this *Brief on Appeal* in triplicate, including payment in the amount of $330.00 to cover the fee for filing the *Brief on Appeal*.

Real Party in Interest:

This application is assigned to Heidelberger Druckmaschinen AG of Heidelberg, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1-7 and 9-17 are rejected and are under appeal. No claims were cancelled. Claim 8 was withdrawn.

Status of Amendments:

No claims were amended after the final Office action. *A Notice of Appeal* was submitted on December 24, 2003. The Examiner has stated in his Advisory action dated January 22, 2004 that the amendments of claims 1 and 16-17 will not be entered for purposes of appeal because they are new issues not previously considered. However, it is noted that the amendments were filed before the final Office action and should have been considered by the Examiner in the final Office action. Correction of the statement in the Advisory action is therefore requested. The Advisory action states

that the amendment was filed on December 9, 2003. However, the amendment was mailed on September 2, 2003 and filed on September 4, 2003 as stated in the Office action dated November 14, 2003.

Summary of the Invention:

As stated in the first paragraph on page 1 of the specification of the instant application, the invention relates to a device for adjusting the phase of perforating devices as a function of the folding mode, the device being accommodated, for example, in a folder disposed downline from a rotary printing machine.

Appellants explained on page 13 of the specification, line 19, that, referring now to the drawings and, first, particularly to Fig. 1 thereof, there is reproduced therein diagrammatically the construction of, and schematically the sequence of cross-folding operations in a folder. A printed material web 1 formed of a number of web layers runs vertically oriented into the folder in a web travel direction 2, the web 1 being perforated between mutually cooperating perforating cylinders 3 and 4 so that the perforations extending in a transverse direction of the material web 1 coincide with the positions of the cross-fold. A perforating tool 5 on the perforating cylinder 3, which is mounted

stationarily, and a perforating tool 6 on the perforating cylinder 4, which is movable, serve for perforating the folded spines at the second cross-fold (double parallel fold), whereas the perforating tool 7 provided on the perforating cylinder 3, which is mounted stationarily, is provided for the first cross-fold. In the case of previous cross-perforating devices, resetting the perforating tools was possible only after the rotary or web press had been stopped and the adjustment had been performed.

It is outlined on page 14 of the specification, line 13, that, after the perforation has been performed, copies 12 are cut from the end of the material web 1 leading in the web travel direction 2, the copies 12 being possibly formed of a number of individual layers lying above one another, depending upon the number of web strands accommodated in the material web 1. The copies 12 are accepted by the folding cylinder 9, transported on the peripheral surface 11 thereof and, due to activation of a folding blade 10, which moves out of the periphery 11 of the folding cylinder 9, are thrust into the folding jaws of a folding-jaw cylinder which is not otherwise specifically illustrated but cooperates with the folding cylinder 9. Accordingly, the folded spine 15 is produced between the ends 13 and 14 of the copy 12, which produces the first cross-fold or first parallel fold. By an otherwise not

specifically illustrated transfer of the folded copies 12 to a further folding cylinder 16, that transfer of copies forming no part of the invention of the instant application, the respective copies 12 are accepted on the peripheral surface 18 of the further folding cylinder 16, and the second cross-fold is then formed by moving the folding blade 17 out and folding the copy 12 which has already been cross-folded once. This produces a double cross-folded copy 22 having ends 24 and 25, the folded spine 23 being formed at the second cross-fold (double parallel fold).

Appellants stated on page 15 of the specification, line 12, that, in the delta-folding mode, the copy is folded twice, as compared with the double parallel folding mode, but at different points, while in the case of the double parallel fold, depending upon the set overfold, a half-fold made at the first and second cross-fold is carried out on the copy 12, which produces a copy 22.

It is further stated on page 15 of the specification, line 19, that, after cross-folding has been performed, be it in delta-folding mode or in double parallel folding mode, the copies 12, 22 folded in such a manner are transported by a transport cylinder 20 to a second longitudinal folding device, which may be provided if required, or directly brought to the delivery.

Appellants explained in the last paragraph on page 15, line 25, that Fig. 2 is a side view of a perforating-cylinder pair 3, 4, a perforating nip or gap 26 for the material web 1 that passes between the cylinders 3 and 4 of the perforating-cylinder pair 3, 4 being predefined between the peripheral surfaces 33 and 34 of the respective perforating cylinders 3 and 4. Depending upon the thickness of the material web 1 to be processed, the perforating cylinder 4 can be set closer to the periphery of the fixedly mounted perforating cylinder 3 or set farther away from the latter. Thereby, the penetration depth of the perforations to be produced in the web layers forming the material web 1 can be set and, if necessary or desirable, changed.

Appellants outlined on page 16 of the specification, line 12, that, in the exemplary embodiment illustrated in Fig. 2, a respective perforating bar 27, 28 is provided for each perforating cylinder 3, 4, and extends coaxially with the respective cylinder shafts 31 and 32 of the perforating cylinders 3 and 4, variably positionable perforating tools being accommodated on the bars 27 and 28. For each perforating cylinder 3, 4, two perforating bars can also be provided, for which note the bars 27.1 and 28.1 in Fig. 4. Located on the perforating bars 27 and 28 illustrated in Fig. 2 are the

perforating tools 38.1 for the delta fold and/or the perforating tool 36.1 for the second cross-fold. They cooperate with the perforating strips 36.2 for the second cross-fold and/or 38.2 for the delta fold, the strips being disposed in a stationary manner on the periphery 34 of the adjustably mounted perforating cylinder 4.

As set forth on page 17 of the specification, line 2, stationarily accommodated on the respective periphery 33, 34 of the two perforating cylinders 3 and 4 are the perforating tools 35.1 and the perforating strip 35.2 cooperating therewith in order to form a perforation in the region of a first cross-fold on the copy. The perforating strip 37.2 cooperating in turn with the perforating tool 37.1 for the second cross-fold, which is accommodated on the further perforating bar 28, is stationary on the fixedly mounted perforating cylinder 3.

As further outlined on page 17 of the specification, line 12, the perforating cylinder 3 rotates in the rotary direction represented by the arrow 29 in relation to the perforating nip or gap 26, while the adjustably mounted perforating cylinder 4 rotates in the same direction as the latter relative to the perforating nip or gap 26, so that a continuous web advance through the perforating nip or gap 26 is established. As

referred to the peripheral surface 34 of the perforating cylinder 4, the perforating bar 28 is adjustable in the direction of rotation represented by the arrow 30 opposite to the direction of rotation of the perforating cylinder 4 represented by the associated unidentified curved arrow.

Appellants stated in the last paragraph on page 17 of the specification, line 24, that the perforating strips 36.2, 37.2 and 38.2, which are reproduced in Fig. 2 and arranged in a stationary manner, could also be accommodated on further perforating bars 27.1 and 28.1 (Fig. 4) which surround the respective peripheral surfaces 33 and 34 of the perforating cylinders 3 and 4 like shells, and could therefore likewise be relatively adjustable or alternatively adjustable, simultaneously with the perforating tools 36.1, 37.1 and 38.1 which are accommodated on the respective perforating bars 27 and 28.

Appellants explained on page 18 of the specification, line 8, that Fig. 3 shows, in highly diagrammatic and schematic form, a drive configuration for the perforating bars 27 and 28 shell-like surrounding the respective perforating cylinders 3 and 4.

Appellants further explained on page 18 of the specification, line 13, that, in the modified embodiment according to Fig. 3, a respective perforating cylinder 3, 4 is provided with one perforating bar 27, 28. The perforating bars 27 and 28 are accommodated in respective mounting supports 43 and 44 on cylinder journals of the respective cylinder shafts 31 and 32, and provided with toothing 47 which permits adjustment in the peripheral direction of the perforating cylinders 3 and 4. The toothing 47 meshes with external toothing 46 on a transmission element 45, which can be constructed as a coulisse or slotted guide that is displaceable or rotatable on the cylinder shaft 31 and 32, respectively.

As set forth in the last paragraph on page 18 of the specification, line 25, both coulisses or slot guides 45 on the cylinder shafts 31 and 32 are connected to an adjusting unit 48, with which the perforating bars 27 and 28 are adjustable relative to the peripheral surfaces 33 and 34 of the perforating cylinders 3 and 4, respectively. Due to the integration of a compensating unit 49 into the sliding guide 50 between the transmission elements 45 on the cylinder shafts 31 and 32, a change in the perforating nip or gap 26 can be achieved irrespective of the adjustment of the phase angles of the perforating bars 27 and 28 on the perforating cylinders 3 and 4 relative to one another. This is augmented by having the

adjustable perforating cylinder 4 connected via a hinged shaft 42 to the drive gear 41 thereof, which in turn is driven by the drive gear 40 of the perforating cylinder 3. In view of the hinged shaft 42, the adjustable cylinder 4 can be adjusted relative to the perforating nip or gap 26 without any problem. The coulisses or slotted guides 45, which are connected to one another via the sliding guide 50 and the compensating unit 49, can be positioned jointly relative to one another, because the correct setting of the perforating tools 36.1 and 38.1 relative to the perforating strips 36.2 and 38.2, respectively, depending upon the folding mode must be assured. If the adjustment of the rotational position of one perforating bar is performed, the perforating bar accommodating perforating strips corresponding thereto is automatically adjusted as well, depending upon the folding mode.

It is stated on page 20 of the specification, line 1, that Fig. 4 shows the kinematics of a perforating-cylinder pair, two perforating bars 27, 27.1 and 28, 28.1 being constructed on each of the cylinders 3 and 4. The perforating bars 27, 27.1, 28 and 28.1 are all accommodated in mounting supports 43, 44 and 54, 55 on the respective cylinder shafts 31 and 32. Differentiating from the exemplary embodiment according to Fig. 3, on the transmission elements 51 illustrated in Fig. 4,

there are two external toothing systems 46 and 52, which cooperate with respectively corresponding toothing systems 47 and 53 on the perforating bars 27, 27.1, as well as 28 and 28.1.

It is further stated on page 20 of the specification, line 13, that provision is made for an adjusting unit 48 which is assigned to both coulisses or slotted guides, analogous to the embodiment according to Fig. 3, the adjusting unit acting upon the transmission elements 51, which it jointly adjusts, a compensating unit 49 already described above in connection with Fig. 3 being integrated into the sliding guide 50.

Appellants outlined in the last paragraph on page 20 of the specification, line 20, that, in the exemplary embodiment according to Fig. 4, the perforating strips 36.2, 37.2 and 38.2 stationarily accommodated in Fig. 2 on the periphery 33, 34 of the respective perforating cylinders 3 and 4 are likewise mounted on perforating bars 27.1 and 28.1, so that the latter are likewise adjustable in the peripheral direction relative to the peripheral surfaces of the perforating cylinders 3 and 4, so that simultaneous movement of the perforating strips 36.2, 37.2 and 38.2 and the perforating tools 36.1, 37.1 and 38.1 is possible.

References Cited:

U.S. Patent No. 5,048,387 (Niitsuma et al.), dated September 17, 1991;

German Published, Non-Prosecuted Patent Application No. DE 43 27 466 A1 (Behmel et al.), dated February 23, 1995.

Issue(s):

Whether or not claims 1-7 and 9-17 are obvious over Behmel et al. in view of Niitsuma et al. under 35 U.S.C. §103(a).

Grouping of Claims:

Claims 1 and 16-17 are independent. Claims 2-7 and 9-15 depend on claim 1. The patentability of claims 2-7 and 9-15 are not separately argued. Therefore, claims 2-7 and 9-15 stand or fall with claim 1. Claims 16 and 17 do not stand or fall with claim 1.

Arguments:

In item 2 on page 2 of the above-mentioned Office action, claims 1-7 and 9-17 have been rejected as being unpatentable over Behmel et al. (German Application Publication DE 43 27 466 A1) in view of Niitsuma et al. under 35 U.S.C. § 103(a).

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claims 1, 16, and 17 call for, inter alia:

> at least one bridge-shaped perforating bar straddling a respective one of said perforating cylinders, said at least one bridge-shaped perforating bar adjustably fixed to an axis of said respective one of said perforating cylinders, some of said perforating tools and said perforating strips being accommodated on said at least one perforating bar, others of said perforating tools and said perforating strips being accommodated directly on said cylinders. (Emphasis added.)

According to the invention of the instant application, there exist perforating tools and perforating strips which are not directly accommodated, fixed, or attached to the perforating cylinder but are disposed on the at least one so-called perforating bar (27, 28). As shown in Fig. 2 of the instant application, there are some perforating tools / strips disposed on the cylinder and some (at least one) disposed on the perforating bar. The perforating bar has the form of a bridge, which straddles the perforating cylinder and is adjustably fixed to the axis of the cylinder (see Figs. 2-3). Fig. 2 also shows that the perforating bars (27, 28) extend above the cap of the cylinders (see dashed lines). Only the perforating tools / strips on the perforating bars are adjustable during the machine operation in the correct

position relative to the cross-folds while the perforating tools / strips remain fixed in the azimuthal position.

In contrast, Behmel et al. do not show any perforating bar in the sense of the invention of the instant application, but only cylinders with movable segments. The Examiner has stated that Fig. 11 of Behmel et al. shows the use of at least one bridge-shaped perforating bar straddling a respective one of the perforating cylinders adjustably fixed to an axis of respective one of the perforating cylinders (see the second paragraph on page 3 of the final Office action). However, as can be clearly seen form Fig. 11 as well as Fig. 10 of Behmel et al., the reference numbers 19 and 19^{I} refer to a cylinder segment of the perforating cylinders 5 and 6^{I} respectively. The cylinder segments 19 and 19^{I} are a part of the respective one of the perforating cylinders 5 and 6^{I} (see, for example, column 3, lines 55-56, where the perforating cylinders 5 and 6^{I} are referred to as two-part perforating cylinders), not a "bridge-shaped perforating bar straddling a respective one of said perforating cylinders," as recited in claims 1, 16, and 17 of the instant application.

Niitsuma et al. do not makeup the deficiencies of Behmel et al.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claims 1, 16, and 17. Claims 1, 16, and 17 are, therefore, believed to be patentable over the art and since claims 2-7 and 9-15 are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the above, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,

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Appendix - Appealed Claims:

1. A device for perforating material webs, comprising:

a pair of perforating cylinders defining a perforation nip therebetween for passage of the material webs through said perforating nip, one of said perforating cylinders being adjustable in relation to said perforating nip relative to the other of said perforating cylinders;

perforating tools capable of producing perforations on copies in an exactly correct position with respect to cross-folds formed in the copies, the perforation position being adjustable during machine operation;

perforating strips, said perforating tools each being cooperatively related with a respective one of said perforating strips for producing transverse or cross-perforations and being adjustable in the correct position relative to the cross-folds;

at least one bridge-shaped perforating bar straddling a respective one of said perforating cylinders, said at least one bridge-shaped perforating bar adjustably fixed to an axis of said respective one of said perforating cylinders, some of said perforating tools and said perforating strips being

accommodated on said at least one perforating bar, others of said perforating tools and said perforating strips being accommodated directly on said cylinders; and

an adjusting unit for adjusting said at least one perforating bar relative to a periphery of said respective one of said perforating cylinders.

2. The perforating device according to claim 1, wherein said at least one perforating bar is mounted on a cylinder shaft extending through said respective one of said perforating cylinders.

3. The perforating device according to claim 1, wherein one of said at least one perforating bar is adjustable in a direction opposite to a direction of rotation of said respective one of said perforating cylinders.

4. The perforating device according to claim 1, wherein one of said perforating tools and one of said perforating strips are accommodated stationarily on said periphery of said respective one of said perforating cylinders.

5. The perforating device according to claim 1, wherein one of said perforating tools is accommodated on one of said at

least one perforating bar on one perforating cylinder, and is cooperatively related with one of said perforating strips accommodated on the other perforating cylinder located opposite said one perforating cylinder.

6. The perforating device according to claim 1, wherein one of said perforating tools used for a delta-folding mode is accommodated on one of said at least one perforating bar on one perforating cylinder, and is cooperatively related with one of said perforating strips accommodated on the other perforating cylinder located opposite said one perforating cylinder.

7. The perforating device according to claim 5, wherein one of said perforating tools is accommodated on one of said at least one perforating bar on said other perforating cylinder, and is cooperatively related with one of said perforating strips accommodated stationarily on said periphery on said one perforating cylinder located opposite said other perforating cylinder.

9. The perforating device according to claim 1, wherein said perforating cylinders have respective cylinder shafts, the perforating device includes mounting supports on said

cylinder shafts, said perforating bars are accommodated in said mounting supports.

10. The perforating device according to claim 1, wherein said perforating cylinders have respective cylinder shafts and transmission elements on said cylinder shafts, said transmission elements to be acted upon by said adjusting unit.

11. The perforating device according to claim 10, wherein said transmission elements are constructed as a coulisse or slotted guide.

12. The perforating device according to claim 10, wherein said transmission elements have at least one force transmission point.

13. The perforating device according to claim 12, wherein said at least one force transmission point is constructed as a toothing.

14. The perforating device according to claim 10, including, between said transmission elements of said perforating cylinders, a compensating device for permitting eccentric

adjustment of one of said perforating cylinders relative to said perforating nip.

15. The perforating device according to claim 1, wherein said pair of perforating cylinders include a stationarily mounted perforating cylinder and an adjustable perforating cylinder, the perforating device includes a drive and a transmission element for said adjustable perforating cylinder, and an articulated connection between said drive and said transmission element.

16 A folder having a device for perforating material webs, the device comprising:

a pair of perforating cylinders defining a perforation nip therebetween for passage of the material webs through said perforating nip, one of said perforating cylinders being adjustable in relation to said perforating nip relative to the other of said perforating cylinders;

perforating tools capable of producing perforations on copies in an exactly correct position with respect to cross-folds formed in the copies, the perforation position being adjustable during machine operation;

perforating strips, said perforating tools being cooperatively related with respective one of said perforating strips for producing transverse or cross-perforations and being adjustable in the correct position relative to the cross-folds;

at least one bridge-shaped perforating bar said at least one bridge-shaped perforating bar adjustably fixed to an axis of said respective one of said perforating cylinders, some of said perforating tools and said perforating strips being accommodated on said at least one perforating bar, others of said perforating tools and said perforating strips being accommodated directly on said cylinders; and

an adjusting unit for adjusting said at least one perforating bar relative to a periphery of said respective one of said perforating cylinders.

17. A pin-less folder having a device for perforating material webs, the device comprising:

a pair of perforating cylinders defining a perforation nip therebetween for passage of the material webs through said perforating nip, one of said perforating cylinders being

adjustable in relation to said perforating nip relative to the other of said perforating cylinders;

perforating tools capable of producing perforations on copies in an exactly correct position with respect to cross-folds formed in the copies, the perforation position being adjustable during machine operation;

perforating strips, said perforating tools being cooperatively related with respective one of said perforating strips for producing transverse or cross-perforations and being adjustable in the correct position relative to the cross-folds;

at least one bridge-shaped perforating bar straddling a respective one of said perforating cylinders, said at least one bridge-shaped perforating bar adjustably fixed to an axis of said respective one of said perforating cylinders, some of said perforating tools and said perforating strips being accommodated on said at least one perforating bar, others of said perforating tools and said perforating strips being accommodated directly on said cylinders; and

an adjusting unit for adjusting said at least one perforating bar relative to a periphery of said respective one of said perforating cylinders.